From Memory to Mastery: Accounting for Control in America, 1750–1880

CAITLIN C. ROSENTHAL

From Memory to Mastery explores the development of commercial numeracy and accounting in America and the English-speaking Atlantic world between 1750 and 1880. Most histories of accounting begin in the factories of England and New England, largely ignoring slave economies. I analyze both traditional sites of innovation, including textile mills and iron forges, and also southern and West Indian plantations. Along several dimensions, the calculative practices of slave owners advanced ahead of northern merchants and manufacturers, and many recorded and analyzed the productivity of their human capital with cruel precision. Following threads from Jamaica and Barbados to the American South, I show how plantation power relations stimulated the development of new accounting practices. The control of planters over their slaves made data easier to collect and more profitable to use. Commercial recordkeeping also expanded in free factories, but in different ways than on southern plantations. The mobility of labor made accounting necessary for keeping track of wages but relatively futile for detailed productivity analysis.

In 1847, Thomas Affleck published the first edition of his "Plantation Record and Account book" (figure 1). A native of Edinburgh and

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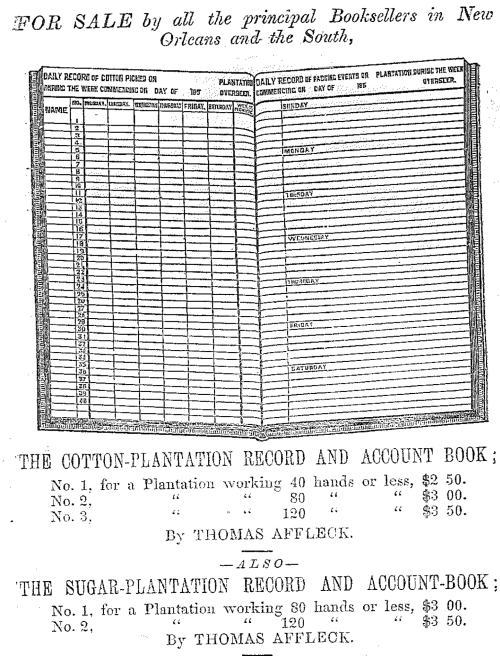


Figure 1 Advertisement, Southern Rural Almanac, 1852, Thomas Affleck Papers, Mss. 3 1263, Louisiana and Lower Mississippi Valley Collections, LSU Libraries, Baton Rouge, LA.

former clerk for the Bank of Scotland, Affleck had lived briefly in Pennsylvania and Ohio before moving south to pursue his fortune planting cotton. A perennial entrepreneur who dabbled in everything from beekeeping to steam plows, Affleck saw a business opportunity selling account books to his neighbors. Though some planters "had kept regular plantation books for many years," their practices varied dramatically, lacking the uniformity that would facilitate comparisons from year to year and from plantation to plantation. He collected the various forms used by southern planters, lined two journals by hand, tested them on his plantation, and soon published the first edition.[1]

Affleck's all-in-one, fill-in-the-blanks books included fifteen different forms, each reproduced in quantities sufficient to measure and monitor a year of business on a slave plantation. Planters could purchase specialized editions tailored to the size of their plantation and the type of crop they grew. The various forms helped planters to track everything from daily cotton picking to clothing allotments, medical

1. Williams, "Thomas Affleck," 45–7. For Affleck's recollection on the development of the account books, see Thomas Affleck to James Henry Hammond, January 3, 1855, 262–6, Box 32, Folder 10, and on Afflecks many and varied ventures, see various folders in Box 31, Thomas Affleck Papers.

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care, and annual sales. Many of the forms fed into others, comprising an interlocking system of accounting that culminated in an annual balance sheet. Affleck boasted grandly of the success of his system, claiming sales of more than 2,000 per year by 1856.[2] Boosterism and hyperbole aside, the books appear to have sold well. The system was adopted by planters across the south, and hundreds of volumes survive to the present in archival collections.

From Memory to Mastery uses account books like Affleck's as a window into the transformation of accounting and commercial numeracy in early America. Despite grand claims of originality, Affleck's system reflected broader trends in the development of commercial expertise across the Atlantic world. He blended techniques learned as a bank clerk in Scotland with plantation practices long used in the American South and, before that, in the British West Indies. Account books like his illuminate the evolution of economic reasoning during the eighteenth and nineteenth centuries. The ways people kept records reflected their values—both moral and monetary. They reveal what people believed was most important and, more precisely, what they hoped to control. By interrogating these documents we can glimpse their economic priorities and the structure of their reasoning.[3]

From Memory to Mastery traces the emergence of what I call "accounting for control" : during the period under consideration bookkeeping evolved from a system of recordkeeping to a tool for decision-making and analysis—from an aid to "memory" into an instrument of "mastery."[4] Not only did account keepers north and south begin to maintain more extensive records, they also began to see them as a repository of insight—as data that could shed light on the present and, eventually, on the future. This transition occurred first and most intensively among market-oriented planters, manufacturers, and merchants. But ordinary Americans—women, workmen, and slaves—also sought out numerical skills, taking courses in commercial colleges or teaching themselves from manuals, almanacs, and textbooks. Across classes and geographies, Americans came to see numbers as more than the sum of their parts.[5]

2. Sales claims can be found in a letter dated March 25, 1856, Box 32, Folder 12, Thomas Affleck Papers.

3. My approach to accounting draws on, among many other texts, Johnson and Kaplan, Relevance Lost; Yates, Control Through Communication; Fear, Organizing Control; Smallwood, Saltwater Slavery; Thornton, Handwriting in America; McCarthy, "A Page, a Day"; Porter, "Quantification and the Accounting Ideal in Science."

4. The larger project discusses the meanings of "mastery" in greater detail, see Rosenthal, "From Memory to Mastery," 7–8.

5. On popular numeracy in America, see Cohen, *A Calculating People*. The shift I describe parallels a transitions described by Cohen as well as by historians of science working on other types of quantification. See, e.g., Porter, *Rise of Statistical Thinking*.

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Although many scholars have described semi-industrial aspects of plantation management, we are only beginning to understand the development of business practices in these settings and their role in the history of American capitalism.[6] Focusing on account books from Jamaica, Barbados, and the American South illuminates the ways calculation enabled the expansion and modernization of slave economies. By giving equal weight to slave economies, this project transforms conventional narratives of management and accounting expertise.[7] While many scholars have contested the notion that slavery was precapitalist, few have considered plantations a site of business or management innovation. In *The Visible Hand*, Alfred Chandler characterized plantations as an "ancient" form of production. In comparisons of invested capital, he found that the south lagged behind the north, but only after eliminating slaves from their capital stock. This study takes up the implications of considering humans as capital and explores the ways it encouraged highly calculating modes of management.[8]

Management innovation was not an inevitable outgrowth of plantation slavery, but neither was it incidental: the power of masters over their slaves gave them power as managers. Plantations became laboratories for agricultural experimentation, and planters and overseers measured and monitored human capital with great precision. Through accounting, human figures became figures on paper, appearing as interchangeable inputs of production. Planters could dictate the diet and health care of their slaves and allocate and re-allocate their labor almost at will. By contrast, northern workers had far less control over their labor, and high turnover made detailed recordkeeping necessary for keeping track of wages but relatively futile for precise experimentation. Along many dimensions, northern practices advanced ahead of southern practices, but not until the late nineteenth century did management disciples like Frederick Winslow

6. Classic works on slavery and capitalism include, Williams, *Capitalism & Slavery*; Engerman and Fogel, *Time on the Cross*; Oakes, *The Ruling Race*; Chaplin, *An Anxious Pursuit*; Johnson, *Soul by Soul*; more recently, see Majewski, *Modernizing a Slave Economy*; Walsh, *Motives of Honor, Pleasure, and Profit*; Smith, *Mastered by the Clock*; Roberts, *Sunup to Sundown*.

7. Studies focused more directly on plantation management and accounting include Higman, *Plantation Jamaica, 1750–1850*; Cooke, "The Denial of Slavery in Management Studies"; van der Linden, "Re-constructing the Origins of Modern Labor Management"; Fleischman, Oldroyd, and Tyson, "Monetising Human Life"; Fleischman, Oldroyd, and Tyson, "Plantation Accounting and Management Practices in the US and the British West Indies at the End of Their Slavery Eras"; Aufhauser, "Slavery and Scientific Management."

8. Chandler, *The Visible Hand*, 64–65 and notes. For an economic perspective on the importance of slaves as invested capital, see Anderson and Gallman, "Slaves as Fixed Capital."

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Taylor begin to analyze labor efficiency in similar ways to the most calculating planters.

Accounting for Mastery: Quantitative Management on Slave Plantations

From Memory to Mastery opens on the plantation of Eli Capell, proprietor of a cotton plantation in Amite County, Mississippi, just fifty miles west of Thomas Affleck's farm. Capell was what nineteenth-century Americans called a "book farmer." He followed the latest developments in scientific agriculture, regularly experimenting with new seed varieties, fertilizers, and methods of managing the enslaved men and women who tilled his land. Aided by his enslaved overseer, Tone, Capell had long conducted ad hoc analysis of labor productivity, making detailed notes in his plantation journal and eventually adopting Thomas Affleck's accounting system. His journals show the rewards he reaped for his diligence. Over the quarter century for which his records survive, he regularly increased his output.[9] Capell was not alone: from 1801 to 1860, the average cotton picked per slave per day increased approximately four-fold, or about 2.3 percent per year.[10]

Determining how much labor slaves could perform was a near obsession among planters, and accounting provided a critical tool in their efforts. Charles Thompson, an enslaved driver charged with monitoring cotton picking, recollected that he sometimes weighed each hand's progress as many as three times per day.[11] Thompson likely used a portable scale that could be taken to the field, and recorded the totals on a slate before being put down in the plantation journal. In Affleck's journals, this was recorded in form "C" (figure 2), which included the names of every slave and the cotton they harvested, both by day and over the course of the week.

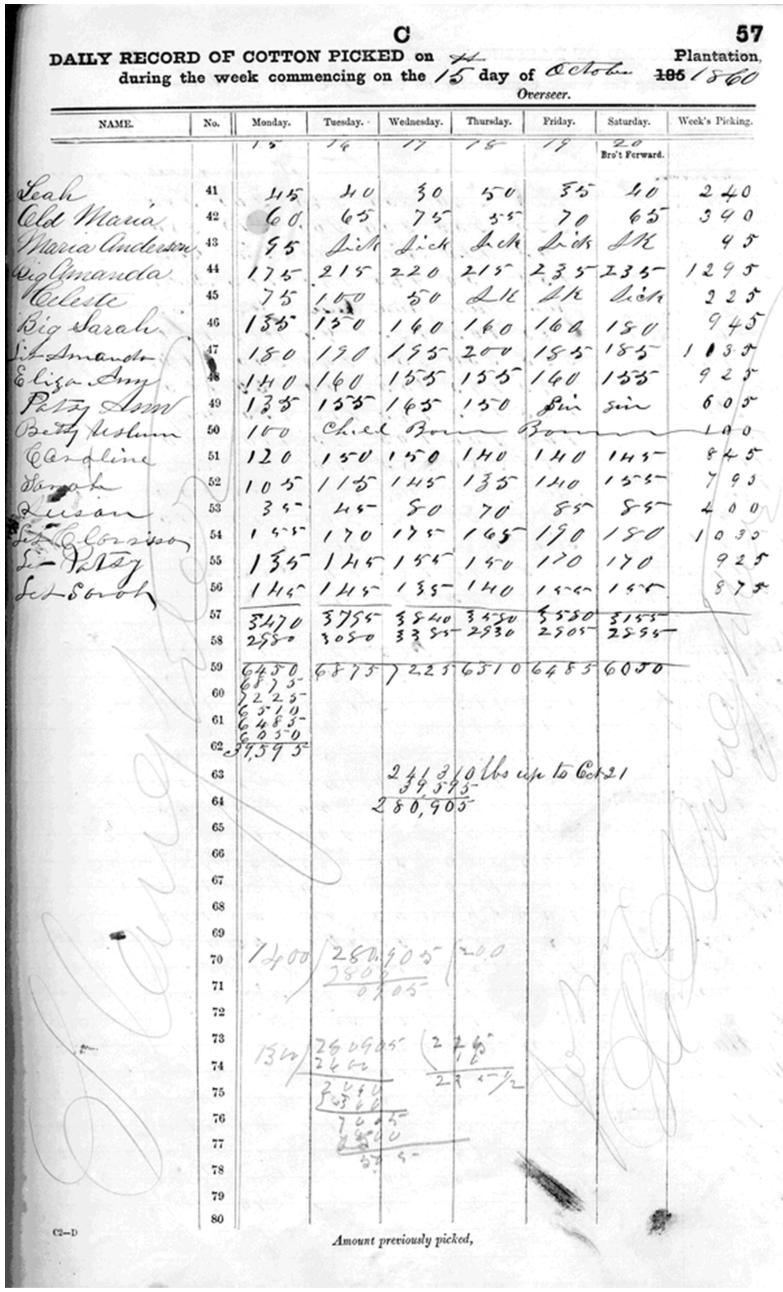
From the pages of their journals, planters calculated a new metric: the prime field hand. A prime field hand was a man or woman who could complete a full task—the amount generally expected from the fittest and healthiest of slaves. All other slaves were measured

9. Plantation diaries for 1842–1867, v. 8–32, Capell Family Papers.

10. Figures on picking productivity come from Olmstead and Rhode, "Biological Innovation and Productivity Growth in the Antebellum Cotton Economy"; Olmstead and Rhode attribute gains primarily to biological innovation. See Rosenthal, From Memory to Mastery, 61–62 for a discussion of their findings and how accounting facilitated advancing productivity. On biological innovation generally, see Olmstead and Rhode, Creating Abundance.

11. Thompson, Biography of a Slave, 37.

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C 57

DAILY RECORD OF COTTON PICKED on ~~the~~ Plantation,
during the week commencing on the 15 day of October ~~185~~ 1860
Overseer.

NAME.	No.	Monday.	Tuesday.	Wednesday.	Thursday.	Friday.	Saturday.	Week's Picking.
		15	16	17	18	19	20 Bro't Forward.	
Leah	41	115	40	30	50	55	40	240
Old Maria	42	60	65	75	55	70	65	340
Maria Anderson	43	55	Sick	Sick	Sick	Sick	Sick	55
Big Amanda	44	175	215	220	215	235	235	1295
Celeste	45	75	150	50	Sick	Sick	Sick	225
Big Sarah	46	135	150	160	160	164	180	945
Little Amanda	47	180	190	195	200	185	185	1135
Eliza Amy	48	140	160	155	155	140	135	925
Patty Ann	49	135	135	145	150	Sick	Sick	605
Betty Lusham	50	100	Child Born			Born		100
Caroline	51	120	150	150	140	140	145	845
Sarah	52	105	115	145	135	140	155	795
Lucian	53	35	45	50	70	85	85	400
Sick Consisso	54	155	170	175	165	190	180	1035
Little Patty	55	135	145	155	150	170	170	925
Sick Sarah	56	145	145	135	140	155	155	875
	57	3470	3755	3840	3450	3580	3155	
	58	2980	3080	3355	2930	2905	2555	
	59	6450	6875	7225	6510	6485	6050	
	60	6175						
	61	6225						
	62	6510						
	63	6485						
	64	6050						
	65	37595						
	66			241340 lbs up to Oct 21				
	67			39595				
	68			280,905				
	69							
	70							
	71							
	72							
	73							
	74							
	75							
	76							
	77							
	78							
	79							
	80							

C2—D

Amount previously picked,

Figure 2 Form "C" the "Daily Record of Cotton Picked" from Eustatia plantation, Mississippi, 1861. Ohio Historical Society and The African-American Experience in Ohio, 1850–1920.

against this ideal, typically rated in quarter increments. Fractional hands could be summed up to find the total working strength of a plantation, a number that enabled comparisons of productivity with

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plantations tilled by slaves of different ages or experience. For example, when the overseer on the plantation of Edward Frost and Thomas Horry took inventory of the slaves in 1841, he listed 40 full hands and 58 "that were not full." Among these were Affa, counted as three-fourths of a hand, Sam, the carpenter, rated at one-half of a hand, and Susey, valued at zero.[12] Rendered as "hands," slaves were not individuals but abstract inputs of production.

The "hand" was the basis for an array of other metrics. The bottom of figure 2 shows these careful calculations. Each week the owner or overseer wrote the names of men and women who went into the fields, and every day he recorded the cotton they brought back. At the bottom, he tallied up the daily picking, adding the days to find the weekly picking, and combined that total with the prior weeks' to reach a running total for the season. After calculating this total, he set aside his pen and picked up a pencil to analyze this data. He divided the running totals by the number of pounds he believed a prime field hand could pick during a week. Over time, he tried 1400, 1300, and 1350 lbs. The resulting quantity was the number of prime hand-weeks expended thus far in the picking of cotton.[13]

Planters used picking records to set targets for their slaves, pushing up the pace of labor based on their own data or on what they read in the agricultural press. The resulting speedup weighed heavily on enslaved men and women. As Solomon Northop recollected in the narrative he wrote after gaining his freedom, "a slave never approaches the gin-house with his basket of cotton but with fear," for if he falls short "he knows that he must suffer," and if he has exceeded his target "in all probability his master will measure the next day's task accordingly."[14] Some planters paid premiums when their slaves exceeded their assigned tasks, but consistently beating a moving target was rarely possible. And the consequences of falling short could be severe: many former slaves describe harsh schemes that prescribed a lash of the whip for every pound they fell short.[15]

The most sophisticated attempts to increase plantation efficiency went beyond pushing up the pace of labor. For example, planters worked to smooth labor requirements seasonally. The most well-known example of such management involves the planting of cotton and corn, the labor requirements of which were anticyclical.[16] Even

12. Inventory of Slaves, Edward Frost and Horry Estate, 1841, in Records of Antebellum Southern Plantations (microfilm), Series C, Part 2, Roll 1, 0134.

13. Eustatia Plantation Account Book.

14. Northup, Twelve Years a Slave, 167–8.

15. Watson, Narrative of Henry Watson, 19–20; Brown, Slave Life in Georgia, 129.

16. Metzer, "Rational management . . . ."

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more complex, George Washington recommended planting several varieties of wheat in order to stagger the harvest. This would eliminate the need to hire extra workers during periods of peak labor. As he wrote in his diary, "if Wheat of different kinds are sowed so as to prevent the Harvest coming on at once, it is my opinion that hirelings of any kinds may be dispensed with."[17] Regarding slaves as fixed costs prompted planters to calculate optimized production not just over the course of a day or week, but from year to year and even over the lifespan of their human capital.

From Memory to Mastery describes the practices of both middling "book farmers" and of very wealthy elites who sat atop complex management hierarchies. On large sugar plantations in Jamaica and Barbados, the typical management structure included "an attorney (or land-agent)"; below him "an overseer (or bailiff)"; below him the bookkeepers; and "under these as many drivers as there are gangs."[18] These layers of management, between a planter and the men and women who tilled his fields, made regular accounting useful for maintaining control and preventing theft.

Some plantations employed as many clerks as might be found in a small counting house. By the 1780s, seven bookkeepers staffed the Barham family's Jamaican Plantations, Island and Mesopotamia.[19] These plantations left behind an impressive array of accounts, though keeping the books was only part of most bookkeepers jobs. As a critic remarked, the name "bookkeeper" was "probably first imposed with a view to delude young men at home as to the nature of the situation." They arrived expecting to keep accounts, but found they also had to "keep swine."[20] However, at least some bookkeepers were specialized professionals. Among the bookkeepers employed by the Barham family was James Neilson, who kept a separate set of books "in Mr. Barham's form."[21] Neilson likely prepared periodic abstracts to be sent back to the Barhams in England. When absentee owners managed operations from abroad, they sometimes required their agents to send detailed quarterly or annual reports. Distance facilitated the commoditization of men and women: overlooking the daily cruelties of plantation life would have been easier from afar, where an inventory of the enslaved looked almost identical to lists of cattle.[22]

17. July 15, 1769, as quoted in Gray, History of Southern Agriculture.

18. Warner, Ashton, 82–3.

19. "West Indies inventories of Slaves etc.,"1819–1754, b. 37, Barham Family Papers.

20. Duncan, 367–8.

21. "Ledger, Journal and Contingency accounts: West Indies, 1777–1820," Barham Family Papers

22. Inventories of livestock are regularly included alongside inventories of slaves in the Barham Family Papers.

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Accounting for Coordination: Recordkeeping in Northern Factories

The second half of *From Memory to Mastery* looks north, comparing plantation accounting practices to those used in textile mills, iron forges, and railroads. If the central image of southern accounting was a record of cotton picking, the quintessential visualization of northern management was the organizational chart. Figure 3 shows the first known organizational chart, lithographed by George H. Henshaw for Daniel McCallum, superintendent of the New York and Erie Railroad. The chart took the form of a tree, with the roots representing "the President and Board of Directors while the other principal officers were shown as offshoots from the stem." The trunk divided "into five principal branches, corresponding with the five divisions of the road." These split into smaller branches where the "various local agents" of the railroad were "represented by different sized leaves." The "roots, stem, branches, twigs, and leaves" of this grand tree included "over 4,700 persons in all!"[23]

Though McCallum's ornate chart was very unusual, it reflected a central concern of many managers: coordination. Instead of focusing on increasing labor productivity, businessmen concentrated their attention on coordinating the activities of firms that were quickly becoming more complex than the largest plantations.[24] *From Memory to Mastery* traces a shift in these managers' focus from market exchanges to internal firm operations. This transition can be seen by comparing organizational charts like McCallum's to another genre of informational chart, known as the "balance chart." This genre was found in textbooks teaching double-entry bookkeeping. A chart from 1836 shows the typical arrangement (figure 4). At the center were the key accounts representing the business: the balance account, the stock account, and profit and loss. The other accounts, representing various buyers and sellers, ships, and the United States Bank, lined the edges of the broadside. Dashed lines connected them to the central accounts, directing the bookkeeper how to close the books into a balance sheet. In contrast to organizational charts, where such lines represented internal reporting relationships, in balance charts these lines represented market exchanges. Balance charts mapped the position of firms in the marketplace, enabling managers

23. Quotations come from a description of the chart in the American Railroad Journal 29, (1856), 280 and is cited by Alfred Chandler in Henry Varnum Poor, 195. Peter Knight directed me to this copy of the chart in the online collections of the Library of Congress.

24. Chandler, *Visible Hand*, 104.

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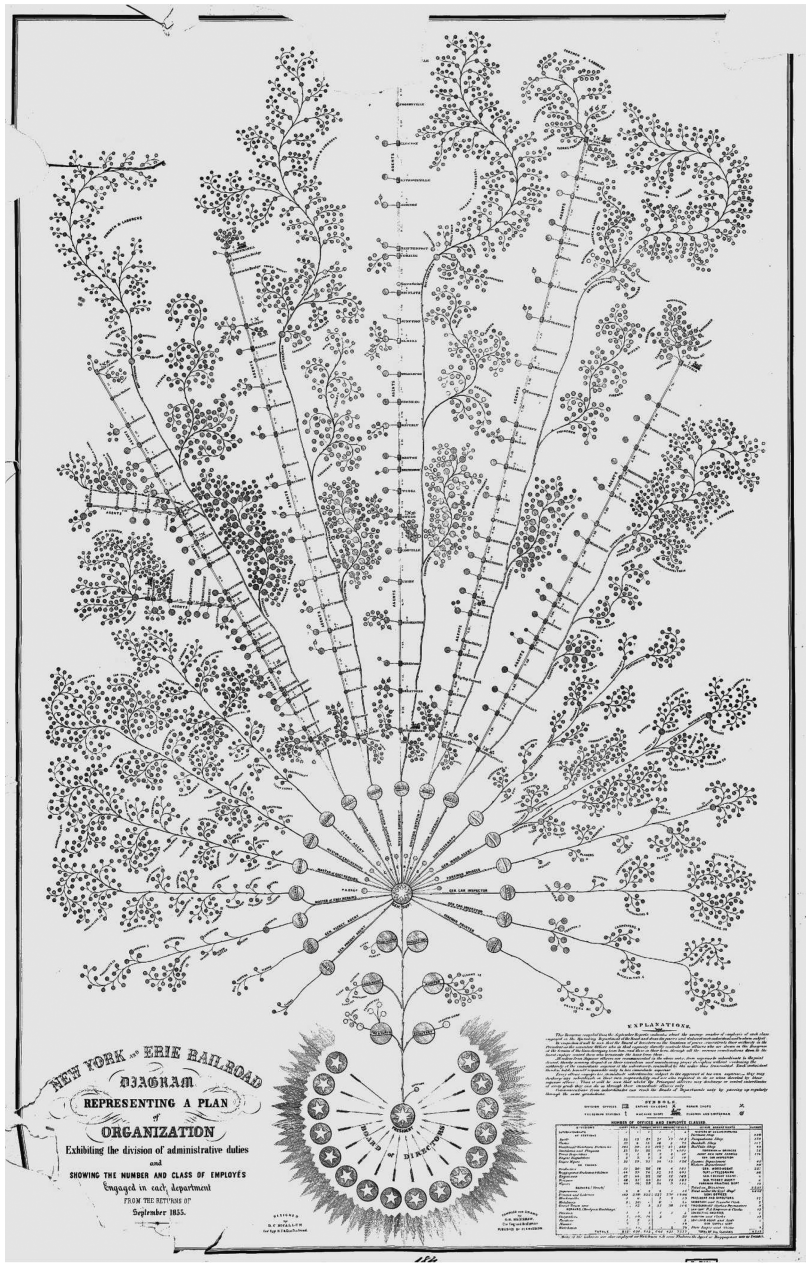


Figure 3 The first known organizational chart took the form of a tree. A 1855 "Plan of Organization" for the New York and Erie railroad. Courtesy: Geography and Map Division, Library of Congress.

and owners to assess the status of the firm relative to each of its trading partners. An organizational tree like McCallum's depicted business as autonomous and hierarchal. Instead of a multitude of

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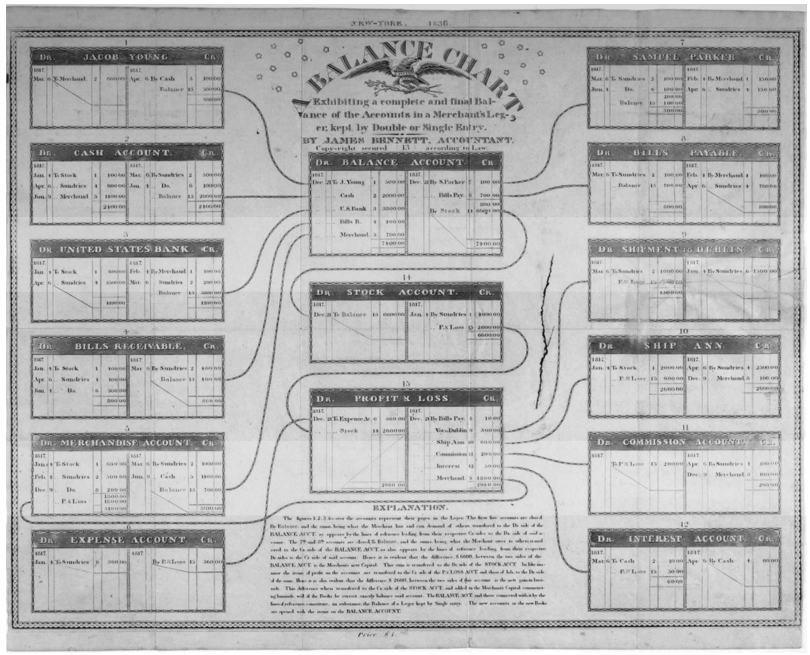


Figure 4 "A Balance Chart" by James Bennett, 1836. Courtesy: American Antiquarian Society, Worcester, Massachusetts.

workers and trading partners, the chart showed a single organism acting as one.[25]

When planters calculated about ways to extract maximum efficiency from their slaves, their computations reflected their position relative to the market. For most slaveholders, outside of a few large purchases and the final sale of cotton, almost every management decision was internal to the plantation. By contrast, early American manufacturers were caught between McCallum's organizational chart and Bennett's balance chart. They dealt not only with increasing scale but also with mobile workforces and complex market interactions.[26]

Free laborers could and did quit, and this simple reality shaped the development of accounting practices. Northern factory owners faced the compound challenge of both recruiting workers and enticing them to stay. In cities, workers often had other options, and in the country they could try their luck on a farm or perhaps acquire land of their own. Companies like Pierson & Company, an early

25. "A Balance Chart." 1836. American Antiquarian Society, Worcester, Massachusetts.

26. Lamoreaux, Raff, and Temin, have argued that Chandler's analysis overlooked an array of nonhierarchical modes of control and that management. The coexistence of the balance chart and the organizational chart fits within their framework "Beyond Markets and Hierarchies."

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nineteenth-century textile mill and iron forge, were plagued by turnover. The margins of their account books are littered with the myriad reasons workers left the factory: in 1822, Eliza Dehol was "discharged for intemperance and improper conduct"; Sally Jennings died; John Still ominously "quit and stays at home for reasons not here mentioned"; and Amy Corwine "went to school."[27]

Faced with such volatility, businessmen sometimes struggled just to keep their factories running, and in industries requiring large capital investments, the costs of a stoppage could be high. Bookkeeping was one tool for controlling these costs, and many accounting innovations reflected the need to keeping systematic labor records like time books and payrolls. These reports helped manufacturers in factories too large to allow for personal relationships with laborers. By bringing information that had only been available on the factory floor into offices, payrolls and time books enabled businessmen who no longer knew their workers to continue to know about them.

Northern factory owners utilized accounting to wrest control from workers, gradually beginning to analyze their costs and profits with more precision. Like planters, they developed new methods to adapt to growing complexity, but they rarely calculated the productivity of individuals. The type of control possible on southern plantations was impractical in factories that struggled to attract and maintain staff, and the success of early cotton mills and iron forges depended more on keeping machines running than on pushing down costs or increasing output. Extracting maximum output from labor was a problem that had to wait until more basic problems of coordination had been solved.

The north also differed from the south in the degree of popular numeracy. More middling Americans pursued commercial training, both in commercial colleges and through self study, using one of many widely available accounting manuals. Commercial colleges offered courses ranging from a few weeks to six months. The first American schools devoted to commercial education were founded in the 1810s, and by the 1830s such schools were common in large cities. Students in New York City could attend Benjamin Franklin Foster's Commercial Academy and those in Boston could enroll in James Robinson's Bowdoin School. By the 1850s and 1860s, schools had opened in smaller towns and cities across the country.[28]

27. Time Book, LE2 and LE3, Isaac Pierson & Bros. Collection. For a later example, see the time books and payrolls from the Lyman Mills Collection for the 1850s. Jonathan Prude analyzed turnover for Samuel Slater's Rhode Island mills, finding that rates almost always exceeded 50 percent per year and sometimes spiked to as much as 200 percent. The Coming of Industrial Order, 145.

28. The earliest data on commercial colleges was collected by the US commissioner of education beginning in 1870. This data is reported in detail in the larger project, where I estimate that approximately 151 schools were in operation in 1871 increasing to well over 200 by the 1880s. Rosenthal, 158–171.

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Though several prominent commercial colleges operated in the South, they were less common than their northern counterparts. And, indeed, planters like Governor James Henry Hammond of South Carolina complained that their overseers did not know how to keep accounts. This frustration was reflected in the structure of Thomas Affleck's accounting system. Taken as a whole, the fifteen forms constituted a remarkably complex system, but each individual form was simple. These fill-in-the-blanks journals could be completed by the minimally numerate. By contrast, northern manufacturers had their books custom lined. Stationers like Thomas Groom of Boston advertised books "made to order with exactness and despatch." With "a few hours' notice," paper could be "ruled to any pattern."[29] These custom-lined books were best kept by skilled bookkeepers.

Quantification and the New History of Capitalism

Almost all research on the history of accounting—this study included—draws primarily on textbooks, trade journals, and individual manuscript account books. Using these sources, historians have documented both instances of impressive sophistication and surprising incompetence. However, they provide limited insight into the overall state of accounting practices. Did most firms follow the recommendations of textbooks or devise their own standards and methods? Authors hoping to sell textbooks and recruit students were prone to hyperbole. And manuscript account books are rarely representative: the fact that they have survived is itself a sign of their exceptionalism.

From Memory to Mastery closes with a quantitative analysis of accounting expertise that contextualizes the close readings of account books elsewhere in the project. In 1851, the state of Massachusetts passed a general incorporation act widening access to the corporate form for businesses with more than $5,000 in capital. The act required all corporations to complete annual "certificates of condition." These forms varied over time, but beginning in in 1875, the certificates took the form of a preprinted balance sheet.[30] Firms often completed the balance sheets correctly, but they also committed

29. Letter Book, LA-1, 1844–1846, Walter Baker & Company Papers.

30. "Public Document 10," in the Public Documents of Massachusetts. On the Massachusetts incorporation law, see also work in progress by Eric Hilt, "Democratizing Incorporation: Law and the Industrial Enterprise in Massachusetts, 1830–1880."

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errors. Analyzing these errors yields a unique new data set that sheds light on the prevalence of accounting practices like double-entry bookkeeping and depreciation. In 1875, 61 percent of Massachusetts corporations struck a balance in their returns, and 39 percent did not. The proportion striking a balance increased steadily, reaching 74 percent by 1881. Firms completing the forms correctly also survived longer and may have earned higher profits than those that committed errors. However, a large minority of firms do appear to have operated successfully using either systems of their own design or no system at all.[31]

From Memory to Mastery joins a new and innovative body of research on the "history of capitalism" that brings economy, work, and labor back to center stage in history departments. However, even as the study embraces a new vision of business history as cultural history, it also seeks to connect with a longer tradition of quantitative historical research in economics departments. The revival of political economy under the banner of the "history of capitalism" often ignores—or even defines itself in opposition to—this tradition. To be sure, this new interdisciplinary field has the potential to raise questions not asked by more traditional economic histories. But any useful reckoning with the transition to capitalism must grapple with that rich literature.

By encompassing both close readings of numerical documents and quantitative analysis, *From Memory to Mastery* seeks to bridge this disciplinary divide, connecting the new history of capitalism with a longer tradition of social science history. Historical studies that consider the cultural and ideological implications of quantification seldom use numerical methods. But these rarely united practices are complementary. The skepticism that comes from contextualizing data can also make us better at using it, and the practice of quantitative analysis can help historians to relate to the counters and quantifiers they study.

Bibliography of Works Cited

Books

Beckert, Sven, Seth Rockman, and David Waldstreicher, eds. *Slavery's Capitalism: A New History of American Economic Development.* Philadelphia: University of Pennsylvania Press, forthcoming.

31. Data limitations make it difficult to disaggregate the influence of accounting from correlated attributes like diligence and good management, but taken together these factors do appear to have helped firms to succeed. See Rosenthal, Ch. 5 for a detailed discussion.

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Chandler, Alfred D. *Henry Varnum Poor, Business Editor, Analyst, and Reformer*. Cambridge, MA: Harvard University Press, 1956.

———. *The Visible Hand: The Managerial Revolution in American Business*. Cambridge, MA: Belknap Press, 1977.

Chaplin, Joyce E. *An Anxious Pursuit*. Chapel Hill: University of North Carolina Press, 1993.

Cohen, Patricia Cline. *A Calculating People: The Spread of Numeracy in Early America*. New York: Routledge, 1999.

Engerman, Stanley L, and Robert William Fogel. *Time on the Cross*. Boston: Little Brown, 1974.

Fear, Jeffrey. *Organizing Control: August Thyssen and the Construction of German Corporate Management*. Cambridge, MA: Harvard University Press, 2005.

Fogel, Robert. *Without Consent or Contract*. New York: Norton, 1989.

Follett, Richard. *The Sugar Masters: Planters and Slaves in Louisiana*. Baton Rouge: Louisiana State University Press, 2007.

Gray, Lewis C. *History of Southern Agriculture in the United States*, vol. 1. Washington, DC: Carnegie Institute, 1933.

Johnson, Thomas H, and Robert S Kaplan. *Relevance Lost: The Rise and Fall of Management Accounting*. Boston: Harvard Business School Press, 1987.

Johnson, Walter. *Soul by Soul: Life Inside the Antebellum Slave Market*. Cambridge, MA: Harvard University Press, 1999.

Kilbourne, Richard. *Debt, Investment, Slaves Credit Relations in East Feliciana Parish, Louisiana, 1825–1885*. Tuscaloosa: University of Alabama Press, 1995.

Majewski, John. *Modernizing a Slave Economy: The Economic Vision of the Confederate Nation*. Chapel Hill: University of North Carolina Press, 2009.

Olmstead, Alan L, and Paul W Rhode. *Creating Abundance: Biological Innovation and American Agricultural Development*. Cambridge, MA: Cambridge University Press, 2008.

Porter, Theodore M. *The Rise of Statistical Thinking, 1820–1900*. Princeton, NJ: Princeton University Press, 1986.

Smallwood, Stephanie E. *Saltwater Slavery: a Middle Passage from Africa to American Diaspora*. Cambridge, MA: Harvard University Press, 2007.

Smith, Mark M. *Mastered by the Clock: Time, Slavery, and Freedom in the American South*. Chapel Hill: University of North Carolina Press, 1997.

Walsh, Lorena Seebach. *Motives of Honor, Pleasure, and Profit: Plantation Management in the Colonial Chesapeake, 1607–1763*. Chapel Hill: University of North Carolina Press, 2010.

Wright, Gavin. *Slavery and American Economic Development*. Baton Rouge: Louisiana State University Press, 2006.

Yates, JoAnne. *Control Through Communication: The Rise of System in American Management*. Baltimore: Johns Hopkins University Press, 1989.

Articles

Anderson, Ralph V, and Robert E Gallman. "Slaves as Fixed Capital: Slave Labor and Southern Economic Development." *Journal of American History* 64, no. 1 (June 1, 1977): 24–46.

https://doi.org/10.1093/es/kht086 Published online by Cambridge University Press

Aufhauser, Keith R. "Slavery and Scientific Management." *Journal of Economic History* 33, no. 4 (December 1, 1973): 811–24.

Cooke, Bill. "The Denial of Slavery in Management Studies." *Journal of Management Studies* 40, no. 8 (2003): 1895–918.

Fleischman, Richard K, David Oldroyd, and Thomas N Tyson. "Monetising human life: slave valuations on US and British West Indian plantations." *Accounting History* 9, no. 2 (July 1, 2004): 35–62.

———. "Plantation accounting and management practices in the US and the British West Indies at the end of their slavery eras." *The Economic History Review* 64, no. 3 (2011): 765—97.

Lamoreaux, Naomi R, Daniel M G Raff, and Peter Temin. "Beyond Markets and Hierarchies: Toward a New Synthesis of American Business History." *The American Historical Review* 108, no. 2 (April 1, 2003): 404–33.

Metzer, Jacob. "Rational Management, Modern Business Practices, and Economies of Scale in the Ante-bellum Southern Plantations." *Explorations in Economic History* 12, no. 2 (1975): 123–50.

Olmstead, Alan L, and Paul W Rhode. "Biological Innovation and Productivity Growth in the Antebellum Cotton Economy." *The Journal of Economic History* 68, no. 4 (2008): 1123–71.

Porter, Theodore M. "Quantification and the Accounting Ideal in Science." *Social Studies of Science* 22, no. 4 (1992): 633–51.

van der Linden, Marcel. "Re-constructing the Origins of Modern Labor Management." *Labor History* 51, no. 4 (2010): 509.

Williams, Robert W. "Thomas Affleck: Missionary to the Planter, the Farmer, and the Gardener." *Agricultural History* 31, no. 3 (July 1, 1957).

Published Narratives and Reports

Brown, John. *Slave Life in Georgia*. Edited by Louis Chamerovzow. London, UK: W.M. Watts, 1855.

Duncan, Peter. *A Narrative of the Wesleyan Mission to Jamaica*. London, UK: Partridge and Oakey, 1849.

Northup, Solomon. *Twelve Years a Slave*. Auburn, NY: Miller, Orton & Mulligan, 1855.

Thompson, Charles. *Biography of a Slave*. Dayton, OH: United Bretheren Publishing House, 1875.

Warner, Ashton. *Negro Slavery Described by a Negro*. London, UK: Samuel Maunder, 1831.

Watson, Henry. *Narrative of Henry Watson, A Fugitive Slave*. Boston: Bela Marsh, 1848.

Archival Sources

Thomas Affleck Papers, Louisiana and Lower Mississippi Valley Collections, LSU Libraries, Baton Rouge, Louisiana.

Capell Family Papers, Louisiana and Lower Mississippi Valley Collections, LSU Libraries, Baton Rouge, Louisiana.

The Barham Papers, Clarendon Depost, Bodleian Library, Oxford. MSS. Clar. dep. b. 33–8; c. 357–91, c. 428–32.

https://doi.org/10.1093/es/kht086 Published online by Cambridge University Press

Walter Baker & Company Records, Baker Library Historical Collections, Harvard Business School, Boston.

Isaac G. Pierson and Bros. Collection, Baker Library Historical Collections, Harvard Business School, Boston.

Lyman Mills Collection, Baker Library Historical Collections, Harvard Business School, Boston.

Records of Antebellum Southern Plantations, Various Collections as Cited. Microfilm accessed at Lamont Library, Harvard University, Cambridge, MA.

Government Documents

Public Document 10. Public documents of Massachusetts. Boston: Secretary of the Commonwealth, 1871–1881.

Report of the Commissioner of Education. Washington, DC: Government Printing Office, 1868–1890. Accessed at the Boston Public Library, Boston, MA.

Dissertations

McCarthy, Molly. "A Page, a Day: A History of the Daily Diary in America." PhD dissertation, Boston College, 2004.

Roberts, Justin. "Sunup to Sundown: Plantation Management Strategies and Slave Work Routines in Barbados, Jamaica and Virginia, 1776–1810." PhD dissertation, Johns Hopkins University, 2009.

Rood, Daniel B. "Plantation Technocrats: A History of Science and Technology in the Slaveholding Atlantic World, 1830–1860." PhD dissertation, University of California, Irvine, 2010.

Rosenthal, Caitlin Clare. "From Memory to Mastery: Accounting for Control in America, 1750–1880." PhD dissertation, Harvard University, 2012.

https://doi.org/10.1093/es/kht086 Published online by Cambridge University Press